

Wrap-up and Recommendations

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Wrap-up and Recommendations

- ▶ NHTSA Organization & Process
- ▶ UA
- ▶ Standards
- ▶ Electronic Controls

- ▶ Recommendations

Wrap-up and Recommendations

Recommendations

- ▶ Goal: Assure the future safety of electronic throttle control and other electronic vehicle control functions
 - NHTSA data, research, rulemaking, and defects investigation activities & processes
 - Human, expertise, infrastructure, and financial resources required

Wrap-up and Recommendations

Recommendations

- Unintended Acceleration – Have we taken the right approach?:
 - Categorizing and understanding reported events
 - Data, and analysis thereof
 - Methodology for assessing potential electronic failures & risks
 - Limitations of testing for rare events
 - New human factors considerations with electronic controls
 - Other considerations?.....

Wrap-up and Recommendations

Recommendations

- Standards – need for additional or modified FMVSS?
 - Appropriateness of existing relevant design and testing standards (SAE, ISO, IEEE, etc.);
 - Requirements for electromagnetic compatibility (EMC) and electromagnetic interference (EMI);
 - Need for Software requirements, and nature thereof
 - Need for Redundancy requirements , and nature thereof
 - Are there unique enforcement consideration?
 - Other?.....

Wrap-up and Recommendations

Recommendations

- Research – What research should we undertake regarding Vehicle Control Electronics reliability?:
 - Data needs and tools
 - Software considerations & testing methods
 - Computer hardware design & testing methods
 - Vehicle systems engineering
 - Driver Override/Fail-safe concepts
 - Best practices from other industries....

Wrap-up and Recommendations

Recommendations

- Research – What additional Processes & Methodologies should we consider?
 - Applicability of Functional Safety Approach
 - Human system integration (HSI)/human factors interaction with electronics
 - Data mining and analysis techniques
 - Potential forensic/problem solving methods
 - Other?...

Wrap-up and Recommendations

Recommendations

- Organization – What organizational needs & resources are appropriate?
 - Areas of expertise
 - Methods to keep pace with rapidly changing technology
 - Required test equipment and facilities
 - Other?...

Wrap-up and Recommendations

Desired Outcomes

- Comprehensive and independent look
- Broad assessment of electronic systems and UA
- Review of possible sources of UA, including mechanical, human, and electronic
- Examination of implications of wide adoption of electronic vehicle controls
- Examination of best practices for assuring safety in other sectors
- Recommendations as described, and others
- Published findings, including information that could be used to advance the state of knowledge

Wrap-up and Recommendations

Thank You